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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/932,014	08/17/2001	Sukomal Roychowdhury	180082-20	4161

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NEW YORK, NY 10022

EXAMINER

PHASGE, ARUN S

ART UNIT	PAPER NUMBER
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1753

DATE MAILED: 11/26/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/932,014

Applicant(s)

ROYCHOWDHURY, SUKOMAL

Examiner

Arun S. Phasge

Art Unit

1753

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 10/6/04.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-6, 16, 17 and 22-25 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6, 16, 17 and 22-25 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 6/28/04.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date: \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 24 are rejected under 35 U.S.C. 102(b) as being anticipated by Szemler et al. (Szemler), WO 94/08907.

Szemler discloses the claimed process for converting organic materials into a gaseous fuel comprising the steps of anaerobically digesting organic materials in the presence of an electrical potential, intermittently or occasionally applied to produce carbon dioxide and a gaseous fuel, such as the claimed methane (see Example 1 on pages 23-25).

Therefore, since the Szemler disclose each and every limitation, the claim is anticipated.

*Claim Rejections - 35 USC § 103*

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1-6, 16-17, 22-23 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Szemler as applied to claim 24 above, and further in view of Day et al (Day), U.S. Patent 4,200,505.

The Szemler discloses the claimed process for the producing of biogas by the electric treatment of anaerobically digested organic materials as stated above, including the types of materials treated (see abstract and page 6, lines 5-13). The reference further discloses the use of electrodes (note: two electrodes reads on the limitation of multiple electrodes) across which the electric potential is applied (see example 1). The reference further discloses that the application of electrical energy to the fermentation process for the intensification of fermentations (see abstract).

The reference fails to disclose that the application of electric potential produces hydrogen from the anaerobically digested organic materials, rather it is used for "fermentations, especially anaerobic mesophilic methane producing microbial fermentations." However, the reference does disclose that at a second

stage metabolites of the first stage are further degraded by acidogenic microorganisms at facultatively anaerobic conditions to form hydrogen and carbon dioxide (see page 3, lines 25-30). Further the reference discloses that electric stimulation of fermentation medium can be applied for intensification of different types of fermentations (see page 13, lines 25-30).

The secondary reference is cited to show the selection of electric current to selectively form hydrogen from waste organic matter (see figure 1 and abstract of the Day patent).

Consequently, the invention as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the disclosure of the Szebler reference with the teachings of the Day patent, because the Szebler patent teaches that the intermittent application of electrical current can cause the intensification of any fermentation and the Day patent teaches the selective application of current to form hydrogen gas from the organic matter. The intensification would reduce the time for reduction of the organic matter as well as the enhancement of the microorganismal activity as claimed.

The Szebler reference fails to disclose the use of the hydrogen in an energy conversion means to supply the electricity to the electrodes, such as the

claimed hydrogen fuel cell. The Day reference is cited to show that such modification to use a portion of the hydrogen to a fuel cell to obtain electricity, which is used to power the electrolytic treatment of the organic matter (see figure 1 and abstract).

Therefore, the invention as a whole would have been obvious to modify the Szemler reference, because the Day patent teaches that such modification allows the efficient use of the hydrogen to power the electrochemical cell.

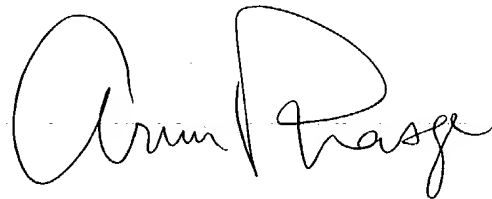
The Szemler reference fails to teach the optimization of the frequency of application of the electric current through the fermentation medium to produce hydrogen. It would have been obvious to one having ordinary skill in the art through routine experimentation to optimize the process, because one having ordinary skill would be motivated to gain an increase of hydrogen at the minimum amount of electricity used.

### *Conclusion*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Arun S. Phasge whose telephone number is (571) 272-1345. The examiner can normally be reached on MONDAY-THURSDAY, 7:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam X Nguyen can be reached on (571) 272-1342. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read 'Arun Phasge', is positioned above the printed name and title.

Arun S. Phasge  
Primary Examiner  
Art Unit 1753

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